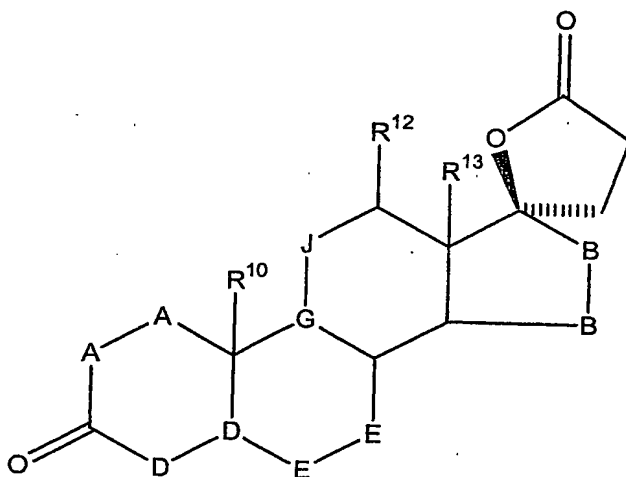


WHAT IS CLAIMED IS:

1. A process for preparing a 17-spirolactone steroid compound or a corresponding open lactone salt, the process comprising:

carbonylating a steroid substrate wherein the substrate is substituted at the C-17 position with a first substituent selected from the group consisting of hydroxy and protected hydroxy; and a second substituent selected from the group consisting of alkenyl and alkynyl.

2. A process for the preparation of a compound corresponding to the Formula 1503:



1503

or the corresponding 17-open lactone or open lactone salt;

wherein

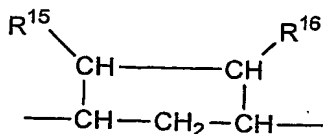
$R^{10}$ ,  $R^{12}$  and  $R^{13}$  are independently selected from the group consisting of hydrogen, halo, haloalkyl, hydroxy, alkyl, alkoxy, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, cyano and aryloxy;

-A-A- represents the group  $-\text{CHR}^1-\text{CHR}^2-$  or  $-\text{CR}^1=\text{CR}^2-$ ;

where  $R^1$  and  $R^2$  are independently selected from the group consisting of hydrogen, halo, hydroxy, alkyl, alkoxy, acyl,

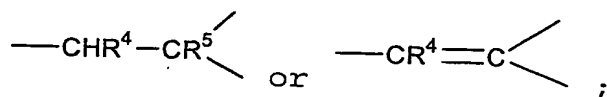
hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano and aryloxy or  $R^1$  and  $R^2$  together with the carbons of the steroid nucleus to which they are attached form a (saturated) cycloalkylene group;

-B-B- represents the group  $-\text{CHR}^{15}-\text{CHR}^{16}-$ ,  $-\text{CR}^{15}=\text{CR}^{16}-$  or an  $\alpha$ - or  $\beta$ -oriented group:



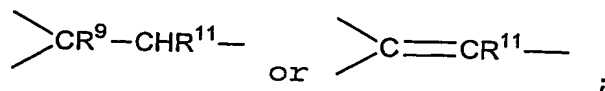
where  $R^{15}$  and  $R^{16}$  are independently selected from the group consisting of hydrogen, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano, and aryloxy;

-D-D- represents the group



where  $R^4$  and  $R^5$  are independently selected from the group consisting of hydrogen, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano and aryloxy or  $R^4$  and  $R^5$  together with the carbons of the steroid backbone to which they are attached form a cycloalkyl group;

-G-J- represents the group

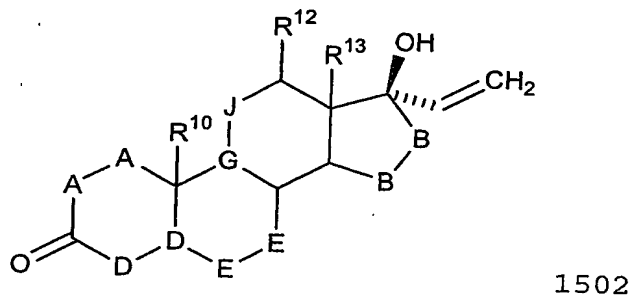


where  $R^9$  and  $R^{11}$  are independently selected from the group consisting of hydrogen, hydroxy, protected hydroxy, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano and aryloxy or  $R^9$  and  $R^{11}$  together form an epoxy group;

-E-E- represents the group  $-\text{CHR}^6-\text{CHR}^7-$  or  $-\text{CR}^6=\text{CR}^7-$ , wherein  $\text{R}^6$  is selected from the group consisting of hydrogen, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano and aryloxy, and  $\text{R}^7$  is selected from the group consisting of hydrogen, hydroxy, protected hydroxy, halo, alkyl, cycloalkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano, aryloxy, heteroaryl, heterocyclyl, acetylthio, furyl and substituted furyl;

the process comprising:

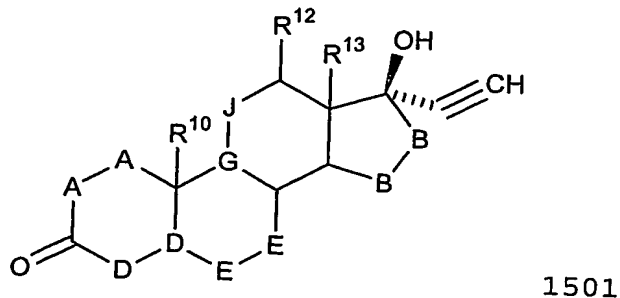
carbonylating a 17-vinyl-17-hydroxy steroid compound of Formula 1502:



wherein  $R^{10}$ ,  $R^{12}$ ,  $R^{13}$ , -A-A-, -B-B-, -D-D-, -G-J- and -E-E- are as defined above.

3. A process as set forth in claim 2 wherein the process further comprises:

preparing the compound of Formula 1502 by reducing the 17-ethynyl group of a compound of Formula 1501 to a 17-vinyl group, said compound of Formula 1501 having the structure:



where the substituents  $R^{10}$ ,  $R^{12}$ ,  $R^{13}$ , -A-A-, -B-B-, -D-D-, -G-J- and -E-E- are as defined above in Formula 1503.

4. A process as set forth in claim 3 wherein said compound of Formula 1501 is contacted with a source of hydrogen in a hydrogenation reaction zone, thereby reducing the 17-ethynyl group and yielding an intermediate comprising the 17-vinyl compound corresponding to Formula 1502; and

the derivative of Formula 1502 is contacted with a source of carbon monoxide and a carbonylation catalyst in a carbonylation reaction zone to yield the product of Formula 1503.

5. A process as set forth in claim 4 wherein said compound of Formula 1501 is simultaneously contacted with a source of hydrogen, a source of carbon monoxide and a catalyst system effective for reducing the 17-ethynyl group of the compound of Formula 1501 to a 17-vinyl group and for carbonylating the resulting derivative of Formula 1502 *in situ* to convert the 17-hydroxy-17-vinyl structure thereof to a 17-spirobutyrolactone structure.

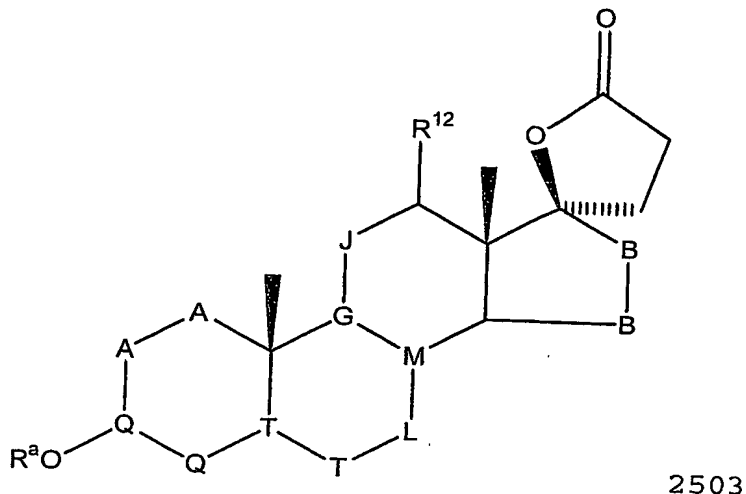
6. A process as set forth in claim 3 comprising:  
contacting said compound of Formula 1501 with a source of hydrogen and a hydrogenation catalyst in a liquid reaction medium comprising a solvent, thereby producing a hydrogenation reaction mixture comprising a hydrogenation reaction solution comprising said intermediate of Formula 1502 in said solvent; and

mixing said hydrogenation reaction solution or a concentrate thereof with water to produce a liquid crystallization medium in which the solubility of said

compound of Formula 1502 is lower than the solubility thereof in said solvent alone; and

crystallizing said compound of Formula 1502.

7. A process for the preparation of a compound corresponding to the Formula 2503:



or the corresponding 17-open lactone or open lactone salt;

wherein

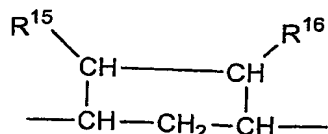
$R^3$  is selected from the group consisting of hydrogen, hydroxy, alkoxy, hydroxyalkyl, alkoxyalkyl and hydroxycarbonyl;

$R^{10}$ ,  $R^{12}$  and  $R^{13}$  are independently selected from the group consisting of hydrogen, halo, hydroxy, alkyl, alkoxy, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, cyano and aryloxy;

-A-A- represents the group  $-\text{CHR}^1-\text{CHR}^2-$  or  $-\text{CR}^1=\text{CR}^2-$ ;

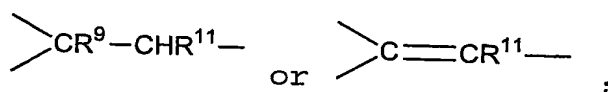
where  $R^1$  and  $R^2$  are independently selected from the group consisting of hydrogen, halo, hydroxy, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano and aryloxy or  $R^1$  and  $R^2$  together with the carbons of the steroid nucleus to which they are attached form a (saturated) cycloalkylene group;

-B-B- represents the group  $-\text{CHR}^{15}-\text{CHR}^{16}-$ ,  $-\text{CR}^{15}=\text{CR}^{16}-$  or an  $\alpha$ - or  $\beta$ -oriented group:



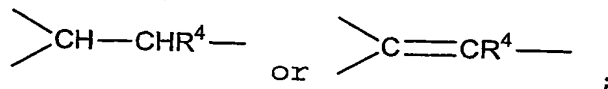
where  $\text{R}^{15}$  and  $\text{R}^{16}$  are independently selected from the group consisting of hydrogen, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano and aryloxy;

-G-J- represents the group



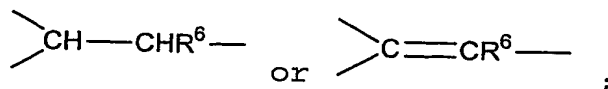
where  $\text{R}^9$  and  $\text{R}^{11}$  are independently selected from the group consisting of hydrogen, hydroxy, protected hydroxy, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano and aryloxy;

-Q-Q- represents the group



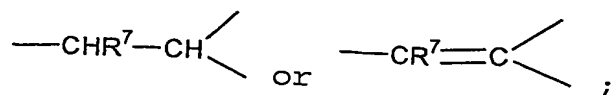
where  $\text{R}^4$  is selected from the group consisting of hydrogen, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano and aryloxy;

-T-T- represents the group



where  $\text{R}^6$  is selected from the group consisting of hydrogen, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano and aryloxy; and

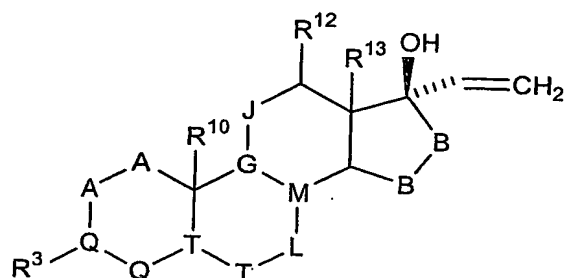
-L-M- represents the group



where  $R^7$  is selected from the group consisting of hydrogen, halo, hydroxy, protected hydroxy, alkyl, cycloalkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano, aryloxy, heteroaryl, heterocyclyl, acetylthio, furyl and substituted furyl;

the process comprising:

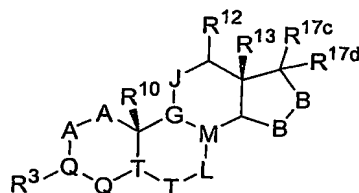
carbonylating a 17-vinyl-17-hydroxy steroid compound of Formula 2502:



2502

where the substituents  $R^3$ ,  $R^{10}$ ,  $R^{12}$ ,  $R^{13}$ , -A-A-, -B-B-, -G-J-, -Q-Q-, -T-T- and -L-M- are as defined in Formula 2503.

8. A compound of Formula:



wherein:

$R^3$  is selected from the group consisting of hydrogen, hydroxy, alkoxy, hydroxyalkyl, alkoxyalkyl and hydroxycarbonyl;

$R^{10}$ ,  $R^{12}$ , and  $R^{13}$  are independently selected from the group consisting of hydrogen, halo, hydroxy, lower alkyl, lower

alkoxy, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, cyano, and aryloxy;

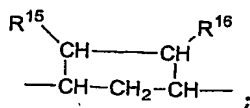
$R^{17c}$  is selected from the group consisting of hydroxy and protected hydroxy; and

$R^{17d}$  is alkenyl;

-A-A- represents the group  $-\text{CHR}^1-\text{CHR}^2-$  or  $-\text{CR}^1=\text{CR}^2-$ ;

where  $R^1$  and  $R^2$  are independently selected from the group consisting of hydrogen, halo, hydroxy, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, cyano, and aryloxy, or  $R^1$  and  $R^2$  together with the carbons of the steroid backbone to which they are attached form a cycloalkyl group;

-B-B- represents the group  $-\text{CHR}^{15}-\text{CHR}^{16}-$  or an  $\alpha$ - or  $\beta$ -oriented group:



where  $R^{15}$  and  $R^{16}$  are independently selected from the group consisting of hydrogen, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano, and aryloxy;

-G-J- represents the group  $>\text{C}=\text{CR}^{11}-$ ;

where  $R^{11}$  is selected from the group consisting of hydrogen, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano and aryloxy;

-Q-Q- represents the group  $>\text{C}=\text{CR}^4-$ ;

where  $R^4$  is selected from the group consisting of hydrogen, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano and aryloxy;

-T-T- represents the group  $>\text{C}=\text{CR}^6-$ ;

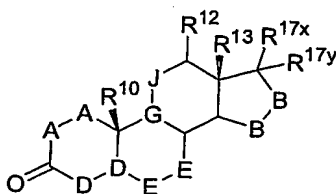


where  $R^6$  is selected from the group consisting of hydrogen, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano and aryloxy; and

-L-M- represents the group  $-\text{CHR}^7-\text{CH}<$ ;

where  $R^7$  is selected from the group consisting of hydrogen, halo, alkyl, cycloalkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano, aryloxy, acetylthio, furyl and substituted furyl.

9. A compound of Formula:



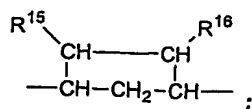
wherein:

$R^{10}$ ,  $R^{12}$ , and  $R^{13}$  are independently selected from the group consisting of hydrogen, halo, hydroxy, lower alkyl, lower alkoxy, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, cyano, and aryloxy;

-A-A- represents the group  $-\text{CHR}^1-\text{CHR}^2-$  or  $-\text{CR}^1=\text{CR}^2-$ ;

where  $R^1$  and  $R^2$  are independently selected from the group consisting of hydrogen, halo, hydroxy, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, cyano, and aryloxy, or  $R^1$  and  $R^2$  together with the carbons of the steroid backbone to which they are attached form a cycloalkyl group;

-B-B- represents the group  $-\text{CHR}^{15}-\text{CHR}^{16}-$  or an  $\alpha$ - or  $\beta$ -oriented group:



where  $R^{15}$  and  $R^{16}$  are independently selected from the group consisting of hydrogen, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano, and aryloxy;

$R^{17x}$  is selected from the group consisting of hydroxy and protected hydroxy; and

$R^{17y}$  is alkenyl or alkynyl;

-D-D- represents the group  $-\text{CR}^4=\text{C}<$  or  $\text{CHR}^4-\text{CR}^5$ ;

where  $R^4$  is selected from the group consisting of hydrogen, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano and aryloxy or  $R^4$  and  $R^5$  together with the carbons of the steroid backbone to which they are attached form a cycloalkyl group;

-G-J- represents the group  $>\text{C}=\text{CR}^{11}-$ ;

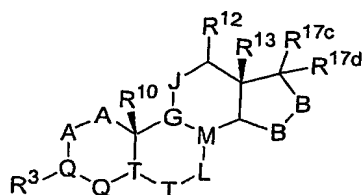
where  $R^{11}$  is selected from the group consisting of hydrogen, hydroxy, protected hydroxy, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano and aryloxy;

-E-E- represents the group  $-\text{CR}^6=\text{CR}^7-$  or  $-\text{CHR}^6-\text{CHR}^7-$ ;

where  $R^6$  is selected from the group consisting of hydrogen, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano and aryloxy; and

$R^7$  is selected from the group consisting of hydrogen, halo, alkyl, cycloalkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano, aryloxy, acetylthio, furyl and substituted furyl.

10. A process for the preparation of a compound of Formula XXIIIZ:



XXIIIZ

wherein:

$R^3$  is selected from the group consisting of hydrogen, hydroxy, alkoxy, hydroxyalkyl, alkoxyalkyl and hydroxycarbonyl; dihydrocarbylamino, di(substituted hydrocarbyl) amino, and N-hetero-cyclyl;

$R^{10}$ ,  $R^{12}$ , and  $R^{13}$  are independently selected from the group consisting of hydrogen, halo, hydroxy, lower alkyl, lower alkoxy, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, cyano, and aryloxy;

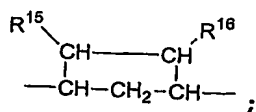
$R^{17c}$  is selected from the group consisting of hydroxy and protected hydroxy;

$R^{17d}$  is alkenyl;

-A-A- represents the group  $-\text{CHR}^1-\text{CHR}^2-$  or  $-\text{CR}^1=\text{CR}^2-$ ;

where  $R^1$  and  $R^2$  are independently selected from the group consisting of hydrogen, halo, hydroxy, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, cyano, and aryloxy, or  $R^1$  and  $R^2$  together with the carbons of the steroid nucleus to which they are attached form a (saturated) cycloalkylene group;

-B-B- represents the group  $-\text{CHR}^{15}-\text{CHR}^{16}-$ ,  $-\text{CR}^{15}=\text{CR}^{16}-$  or an  $\alpha$ - or  $\beta$ -oriented group:



where  $R^{15}$  and  $R^{16}$  are independently selected from the group consisting of hydrogen, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano, and aryloxy;

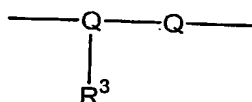
or  $R^{15}$  and  $R^{16}$ , together with the C-15 and C-16 carbons of the steroid nucleus to which they are attached, form a (saturated) cycloalkylene group;

-G-J- represents the group  $>C=CR^{11}-$ ;

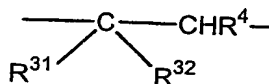
where  $R^{11}$  is selected from the group consisting of hydrogen, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano and aryloxy;

-Q-Q- represents the group  $>C=CR^4-$ ;

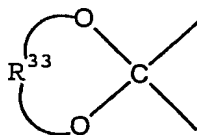
where  $R^4$  is selected from the group consisting of hydrogen, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano and aryloxy; or



together represent the group



where  $R^{31}$  and  $R^{32}$  are independently selected from the group consisting of hydroxy and alkoxy, or  $R^{31}$ ,  $R^{32}$  and the C-3 carbon of the steroid nucleus to which they are attached from the group



where  $R^{33}$  is alkylene.

-T-T- represents the group  $>C=CR^6-$ ;

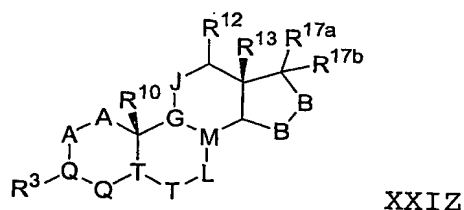
where  $R^6$  is selected from the group consisting of hydrogen, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano and aryloxy; and

-L-M- represents the group  $-\text{CHR}^7-\text{CH}<$ ;

where  $R^7$  is selected from the group consisting of hydrogen, halo, alkyl, cycloalkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano, aryloxy, acetylthio, furyl and substituted furyl;

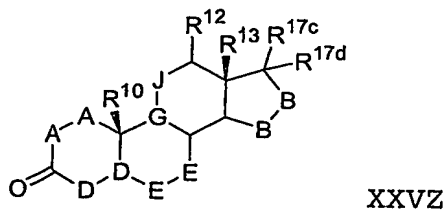
or  $R^6$  and  $R^7$ , together with the C-6 and C-7 carbons of the steroid nucleus to which they are attached, form a (saturated) cycloalkylene group;

the process comprising reducing the 17-alkynyl group of a compound of Formula XXIZ, said compound of Formula XXI having the structure:



wherein  $R^3$ ,  $R^{10}$ ,  $R^{12}$ ,  $R^{13}$ , -A-A-, -B-B-, -G-J-, -Q-Q-, -T-T-, and -L-M- are as defined above, and  $R^{17a}$  is selected from the group consisting of hydroxy and protected hydroxy; and  $R^{17b}$  is alkynyl.

11. A process for the preparation of a compound of Formula XXVZ:



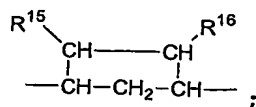
wherein:

$R^{10}$ ,  $R^{12}$ , and  $R^{13}$  are independently selected from the group consisting of hydrogen, halo, hydroxy, lower alkyl, lower alkoxy, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, cyano, and aryloxy;

-A-A- represents the group  $-\text{CHR}^1-\text{CHR}^2-$  or  $-\text{CR}^1=\text{CR}^2-$ ;

where  $R^1$  and  $R^2$  are independently selected from the group consisting of hydrogen, halo, hydroxy, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, cyano, and aryloxy, or  $R^1$  and  $R^2$  together with the carbons of the steroid nucleus to which they are attached form a (saturated) cycloalkylene group;

-B-B- represents the group  $-\text{CHR}^{15}-\text{CHR}^{16}-$ ,  $-\text{CR}^{15}=\text{CR}^{16}-$  or an  $\alpha$ - or  $\beta$ -oriented group:



where  $R^{15}$  and  $R^{16}$  are independently selected from the group consisting of hydrogen, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano, and aryloxy;

or  $R^{15}$  and  $R^{16}$ , together with the C-15 and C-16 carbons of the steroid nucleus to which they are attached, form a (saturated) cycloalkylene group;

$R^{17c}$  is selected from the group consisting of hydroxy and protected hydroxy; and

$R^{17d}$  is alkenyl;

-D-D- represents the group  $-\text{CR}^4=\text{C} \begin{array}{l} \diagup \\ \diagdown \end{array}$  or  $\text{CHR}^4-\text{CR}^5 \begin{array}{l} \diagup \\ \diagdown \end{array}$ ;

where  $R^4$  is selected from the group consisting of hydrogen, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano and aryloxy or  $R^4$  and  $R^5$  together with the carbons of the steroid backbone to which they are attached form a cycloalkyl group;

-G-J- represents the group  $\text{>C=CR}^{11}\text{—}$  or  $\text{CHR}^4\text{—}\text{CR}^5$ ;

where  $\text{R}^{11}$  is selected from the group consisting of hydrogen, hydroxy, protected hydroxy, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano and aryloxy; and

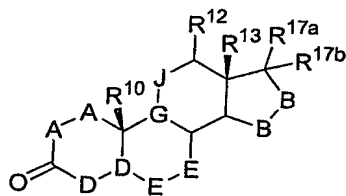
-E-E- represents the group  $\text{—CR}^6\text{=CR}^7\text{—}$  or  $\text{—CHR}^6\text{—CHR}^7\text{—}$ ;

where  $\text{R}^6$  is selected from the group consisting of hydrogen, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano and aryloxy; and

$\text{R}^7$  is selected from the group consisting of hydrogen, halo, alkyl, cycloalkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano, aryloxy, acetylthio, furyl and substituted furyl;

or  $\text{R}^6$  and  $\text{R}^7$ , together with the C-6 and C-7 carbons of the steroid nucleus to which they are attached, form a (saturated) cycloalkylene group;

the process comprising reducing the 17-alkynyl group of a compound of Formula XXIVZ with a source of hydrogen, said compound of Formula XXIVZ having the structure:

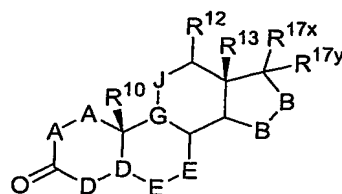


XXIVZ

wherein  $\text{R}^{10}$ ,  $\text{R}^{12}$ ,  $\text{R}^{13}$ , -A-A-, -B-B-, -D-D-, -G-J-, and -E-E- are as defined above;  $\text{R}^{17a}$  is selected from the group consisting of hydroxy and protected hydroxy; and

$\text{R}^{17b}$  is alkynyl.

12. A compound corresponding to Formula

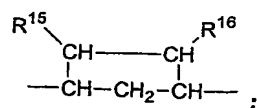


wherein R<sup>10</sup>, R<sup>12</sup> and R<sup>13</sup> are independently selected from the group consisting of hydrogen, halo, hydroxy, lower alkyl, lower alkoxy, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, cyano, and aryloxy;

-A-A- represents the group -CHR<sup>1</sup>-CHR<sup>2</sup>- or -CR<sup>1</sup>=CR<sup>2</sup>-;

where R<sup>1</sup> and R<sup>2</sup> are independently selected from the group consisting of hydrogen, halo, hydroxy, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, cyano, and aryloxy, or R<sup>1</sup> and R<sup>2</sup> together with the carbons of the steroid nucleus to which they are attached form a (saturated) cycloalkylene group;

-B-B- represents the group -CHR<sup>15</sup>-CHR<sup>16</sup>-, -CR<sup>15</sup>=CR<sup>16</sup>-, or an  $\alpha$ - or  $\beta$ -oriented group:



where R<sup>15</sup> and R<sup>16</sup> are independently selected from the group consisting of hydrogen, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano, and aryloxy, or R<sup>15</sup> and R<sup>16</sup>, together with the C-15 and C-16 carbons of the steroid nucleus to which they are respectively attached, form a cycloalkylene group;

-D-D- represents the group  $-\text{CR}^4=\text{C}$  or  $\text{CHR}^4-\text{CR}^5$ ;

where R<sup>4</sup> is selected from the group consisting of hydrogen, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano and aryloxy or R<sup>4</sup> and R<sup>5</sup> together with the carbons of the steroid backbone to which they are attached form a cycloalkyl group;



wherein  $R^{10}$ ,  $R^{12}$  and  $R^{13}$ , are independently selected from the group consisting of hydrogen, halo, hydroxy, lower alkyl, lower alkoxy, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, cyano, and aryloxy;

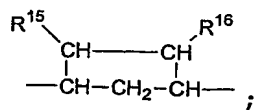
$R^{17x}$  is hydroxy or protected hydroxy;

$R^{17y}$  is alkenyl or alkynyl;

-A-A- represents the group  $-\text{CHR}^1-\text{CHR}^2-$  or  $-\text{CR}^1=\text{CR}^2-$ ;

where  $R^1$  and  $R^2$  are independently selected from the group consisting of hydrogen, halo, hydroxy, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, cyano, and aryloxy, or  $R^1$  and  $R^2$  together with the carbons of the steroid nucleus to which they are attached form a (saturated) cycloalkylene group;

-B-B- represents the group  $-\text{CHR}^{15}-\text{CHR}^{16}-$ ,  $-\text{CR}^{15}=\text{CR}^{16}$  or an  $\alpha$ - or  $\beta$ -oriented group:



where  $R^{15}$  and  $R^{16}$  are independently selected from the group consisting of hydrogen, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano, and aryloxy;

or  $R^{15}$  and  $R^{16}$ , together with the C-15 and C-16 carbons of the steroid nucleus to which they are respectively attached, form a (saturated) cycloalkylene group;

-D-D- represents the group  $-\text{CR}^4=\text{C} \begin{array}{l} \diagup \\ \diagdown \end{array}$  or  $-\text{CHR}^4-\text{CR}^5 \begin{array}{l} \diagup \\ \diagdown \end{array}$ ;

where  $R^4$  is selected from the group consisting of hydrogen, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano and aryloxy or  $R^4$  and  $R^5$  together with the carbons of the